

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	"6009518".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/03/25 19:51
S2	136	726/34.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/03/25 19:56
S3	41970	"726".clas. "713".clas. "380".clas.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/25 19:57
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## EAST Search History

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## EAST Search History

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# Computer hardware

From Wikipedia, the free encyclopedia

Revision as of 20:51, 10 June 2003; view current revision

← Older revision | Newer revision →

**Hardware** is a comprehensive term for all of the physical parts of a computer, as distinguished from the data it contains or operates on, and the software that provides instructions for the hardware to accomplish tasks. The boundary between hardware and software is slightly blurry - firmware is software that is "built-in" to the hardware, but such firmware is usually the province of computer programmers and computer engineers in any case and not an issue that computer users need to concern themselves with.

A typical computer (Personal Computer, PC) contains in a desktop or tower case the following parts:

- Motherboard which holds the CPU, main memory and other parts, and has slots for expansion cards
- power supply - a case that holds a transformer, voltage control and fan
- storage controllers, of IDE, SCSI or other type, that control hard disk, floppy disk, CD-ROM and other drives; the controllers sit directly on the motherboard (on-board) or on expansion cards
- graphics controller that produces the output for the monitor
- the hard disk, floppy disk and other drives for mass storage
- interface controllers (parallel, serial, USB, Firewire) to connect the computer to external peripheral devices such as printers or scanners
- Computer architecture
  - Central Processing Unit - CPU
  - Motherboard
    - PCI Bus
    - ISA Bus
    - USB
    - AGP
- Storage
  - Compact disc
  - What is a disk versus what is a disc
  - DVD
  - Floppy disk
  - Hard disk
  - Punch card
  - RAM
  - Tape Drive
- Input/Output
  - Braille Embosser
  - CD-ROM
  - Keyboard
  - Monitor
  - Mouse
  - Computer Speech Recognition
  - Computer Speech Synthesis
  - DVD-ROM
  - Digitizing Tablet
  - Graphics card
  - Joystick
  - Joypad
  - Modem

- Network card
- Plotter
- Printer
- Refreshable Braille Display
- Scanner
- Sound card
- Touch screen
- Trackball
- Webcam
- Pointing devices

## See also

- legacy system
- Open hardware

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# Smart card

From Wikipedia, the free encyclopedia

Revision as of 00:11, 17 March 2003; view current revision

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A **smart card** is a tiny secure cryptoprocessor embedded within a credit card-sized or smaller (like the GSM SIM) card. The **ISO/IEC 7816** series of standards define:

- the physical shape of the smart card
- the positions and shapes of its electrical connectors
- the communications protocols and power voltages to be applied to those connectors
- the functionality
- the format of the commands sent to the card and the response returned by the card
- *etc...*

In a *contact-type* smart card, the chip can be recognised by an area of gold-plated contacts about 1 cm<sup>2</sup> close to the short side of the card. Normally the contact communication is relatively slow (9.6kbps-115.2kbps). There is currently a trend towards implementing USB 1 on these contacts (up to 10Mbps), but there is not yet a final standard.

A second type is the *non-contact type* called *contactless* smart card, where the chip communicates with the card reader through wireless technology. The standard for the contactless protocol for smart cards is **ISO/IEC 14443** (parts 1-4) from the year 2001.

Dual-interface (or more) cards do implement contactless and contact interfaces or multiple contactless or contact interfaces, e.g. USB and normal serial protocol.

The applications of smartcards include their use as credit or ATM cards, SIMs for mobile phones, authorization cards for pay television, high security identification and access control cards, public transport tickets, etc. They are suitable for this task, because they are engineered to be tamper resistant.

Smart cards may also be used as electronic wallets. The smart card chip can be loaded with electronic money, which can be used to pay parking meters, vending machines, and merchants. Cryptographic protocols protect the exchange of money between the smart card and the accepting machine. Examples for this are Proton, GeldKarte and Quick.

One problem of smart cards is the failure rate. The plastic card in which the chip is embedded is fairly flexible, and many users are not overly careful with their card. Smart cards are often carried in wallets or pockets, which is a fairly harsh environment for a chip. Even a low failure rate of 1% creates significant problems for a bank that has millions of outstanding ATM cards. The reliability improves with contactless-only cards.

## External links

### Smart card manufacturers

- Gemplus (<http://www.gemplus.com/>)
- Giesecke & Devrient (<http://www.gdm.de/>)
- IBM (<http://www.zurich.ibm.com/csc/infosec/smartcard.html>)
- SchlumbergerSema (<http://www.smartcards.net/>)



- Telesec (<http://www.telesec.de/>)

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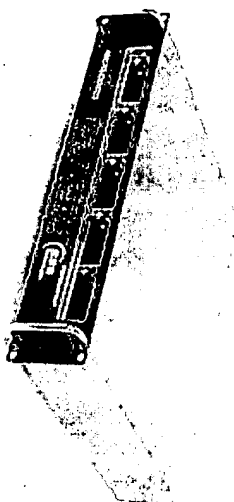
Home > Custom Project Examples

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- Custom Design Philosophy
- Custom Paint & Logo
- Fed-Sid-595 Colors
- Pantone Colors
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**Custom Products & Design Services**

Follows are just a few of the many custom designs, rackmount and non-rackmount, we have designed and manufactured. These examples highlight our capabilities as well as provide examples for future projects for other clients. Chassis Plans' engineers have been providing innovative solutions to industry since 1985 and are conversant in all aspects of design and agency certification. We have provided simple sheet metal boxes through highly complex ship-board Navy certified designs and Telco Nebs certified systems. Please visit our web page which details our design philosophy and the steps involved in bringing a design to market.

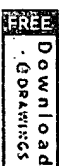


From prototype to production, Chassis Plans prides itself on quality rackmount enclosures. For turnkey projects or specialized engineering services, Chassis Plans understands how to overcome the technical challenges involved in converting innovative concepts into successful, timely products.

Our design philosophy is to provide exceptionally engineered, cost effective industrial computers and rackmount enclosures at a competitive price. Chassis Plans provides a turnkey solution for custom industrial rackmount systems, allowing clients to have quality industrial chassis with minimal investment in time or money.

**On-time  
On-budget  
Technically sophisticated  
Turn Key  
Incredibly well documented**

Some of the following examples offer Solidworks® eDrawings 3-D models. These files require the free eDrawing® viewer

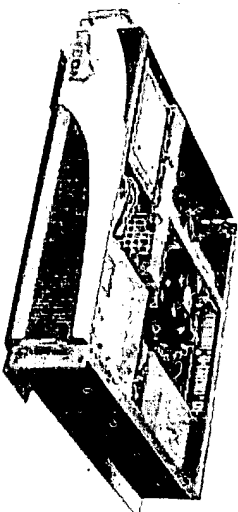




available from SolidWorks. Click the image at right to go to the eDrawings website. The following files can be greater than 1 or 2 Megs but well worth downloading.

## Custom Door w/ Paint & Logo

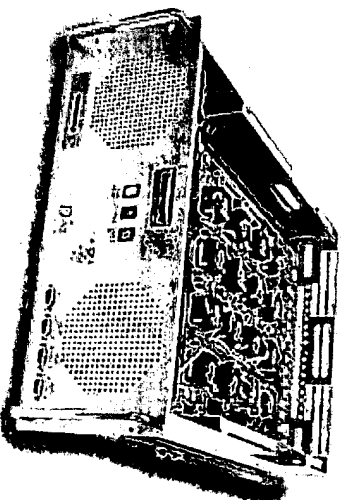
The customer had seen a custom chassis on our Did You Know Paint and Logo Brochure and wanted a similar look. The result is our standard E1Chassis 2U rack mount enclosure with a new 3-dimensional door, custom paint on the lid and ears, and customer logo silk screened on the face of the door. Chassis Plans provided fully integrated turn-key systems to the customer.



## 'Son Of Monster' Logic Emulation Enclosure

The Dini Group, a local designer and manufacturer of highly sophisticated logic emulation boards, approached Chassis Plans to design and manufacture the enclosure for their new DN8000K10 Virtex4 based ASIC prototyping system. This incredibly advanced emulation engine required a 15x22.1" PCB to hold the 16 FPGA chips and 9 daughter cards to provide emulation of up to 24 million gates in logic and memory designs. A board this large is quite fragile and very expensive.

Chassis Plans designed an enclosure that provides a removable inner chassis to hold the PCB allowing the board to be placed on a



bench for testing and configuration, yet be fully protected. The inner chassis fits inside a custom 19" rack mount enclosure for system operation. The chassis provides system support, excellent cooling, a 600W power supply, and adaptable rear panel I/O.

Close collaboration between the PCB and mechanical design teams assured the enclosure system performed as required on the first design spin.

Go to [The Dini Group 'Son Of Monster' page](#) for more information and photos of this amazing system. Click the two photos to the right for larger views.



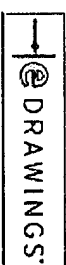
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## **Custom 1U Network Appliance**

The customer required a custom chassis to house two FPGA development boards to monitor network traffic in an effort to reduce network overhead and improve client responsiveness.



Chassis Plans provided a custom network appliance type design with a 1U redundant power supply, mounting for the two boards, rear panel connectors, and two fans. The rack ears are a unique design allowing 4-post or 2-post rack mounting.



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## **Special Integration Sun Tape System**

The customer was purchasing systems from Sun Microsystems to house a Sun SCSI tape



subsystem drive. The enclosure from Sun was too deep for a particular application leaving the customer without a solution. Chassis Plans provided a specially integrated 1U F6000 chassis. We had to design and fabricate new cables, change the power switch, blank the reset switch, and incorporate a brass grounding stud on the rear panel. The result is an attractive chassis with a door covering the tape drive and controls that perfectly fits the customer's requirements. Chassis Plans is providing a Turn Key fully integrated solution for this customer.

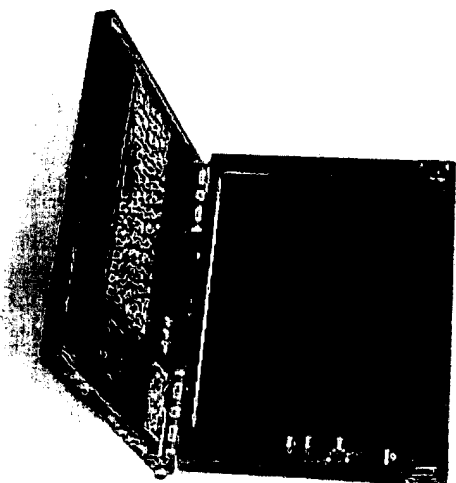
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### **Secure Submarine LCD Display**

Lockheed contracted with Chassis Plans to design and manufacture an LCD/Keyboard combination for use aboard nuclear submarines. The principle use is for officers to be able to connect to both the secure and non-secure systems from their quarters.

Included is a 17" TFT LCD, full feature keyboard and glidepoint mouse device and two USB ports. Mounted inside is an Icron USB hub extender allowing the keyboard, glidepoint, and two USB ports to interface via Cat-5 cable with a server anywhere on the boat.

The challenging specification included footprint and size constraints and a weight limit of 18lbs. Chassis Plans delivered a system weighing only 12lbs much to the delight of the customer.



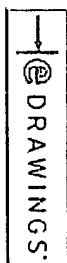
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### **Wall Mount Paint Control / Display**

Haden asked Chassis Plans to design a controller for their Liquid Paint Application

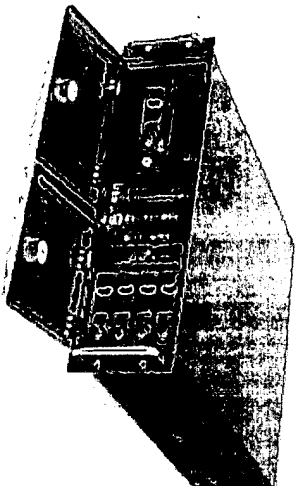


Control System. The wall mounted enclosure featured a passive backplane, single board computer and their control cards. The lid was designed to accept different overlays allowing multiple uses for the same enclosure. See the [Haden Datasheet](#).



## **DVR Security Appliance**

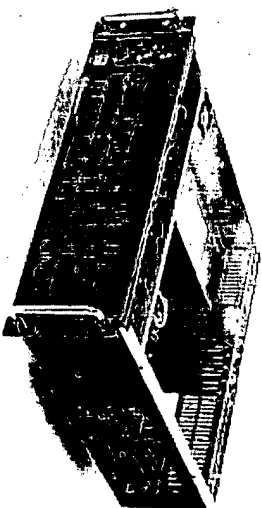
A manufacturer of Digital Video Recorders and related digital security products approached Chassis Plans to design and build their next generation security appliance. Difficult design constraints included a depth limit of 2 1/4", four high speed large hot swap raid drives, a vibration isolated fan system to prevent drive errors, high component density, and an obstructed rear panel which limited cooling flow. The customer had rigorous component temperature limits. Chassis Plans delivered two different system configurations to satisfy a changing specification. The customer had a short time-to-market window.



## **UAV Controller**

A large defense contractor specializing in tactical ground control shelters required a rugged diskless system for Unmanned Aerial Vehicle control. Time to delivery was critical.

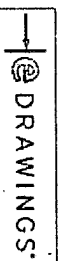
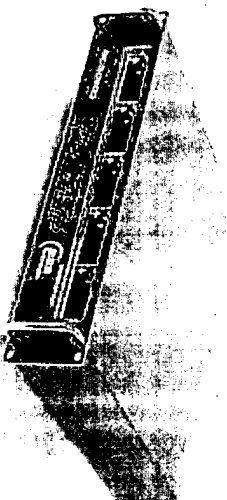
Chassis Plans leveraged an existing COTS design to quickly and inexpensively meet the requirement. Starting with the D3Chassis, we shortened the chassis to 18" and designed a new front panel to maximize cooling flow. The



chassis accommodates an EATX motherboard and a redundant 2U power supply. Three 90mm cooling fans and generous chassis openings assure the installed components are well cooled.

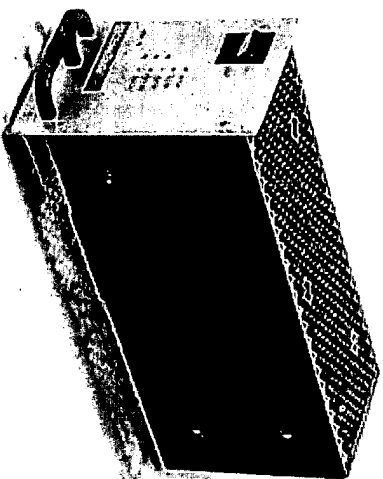
### **AMC Module Chassis**

Advanced Mezzanine Cards, or AMC modules, were originally developed to add I/O capability to CPCI and ATCA products. An AMC products developer approached Chassis Plans to design and manufacture the first rack mount system to enable the use of 10 AMC modules in a 2U enclosure. This is bleeding edge technology and Chassis Plans engineers worked closely with the AMC hardware manufacturer to provide a system to the customer in record time for display at SuperComm 2005. The system was designed with Nebbs certification in mind.



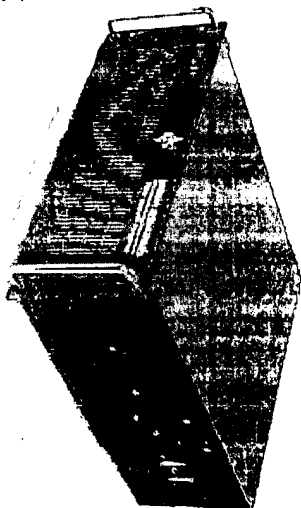
### **Reverse Engineered Power Supply**

The customer had been purchasing a custom power supply enclosure from a local vendor for several years. They required several enhancements to the design and the vendor had no engineering documentation. Chassis Plans reverse engineered the enclosure to fit within their system. In addition to their required changes, Chassis Plans engineers proposed several changes to lower their costs and simplify the system assembly.



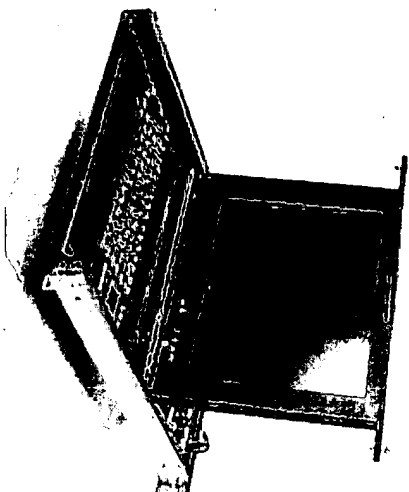
## Custom Paint and Logo

Custom paint and logo to customer specification is our most common special. In this case, the customer wanted the entire chassis painted to a Pantone specification and their logo silk screened on the door. The base chassis is the C3CHASSIS. Multicolor logos and front panel silk screened accents can "spiff up" a chassis look and make it *your* product instead of some generic computer.



## Ultra High Res 1600 x 1200 Keyboard LCD Display

A military customer required an ultra high resolution LCD display / keyboard but had a height limit of 1U. In addition, there was limited depth available. Chassis Plans performed by modifying our standard CPCSD1-17 Clamshell Keyboard LCD to incorporate the Samsung LTM190 panel with a proprietary high performance LCD controller. There is no 1U keyboard LCD display with a larger monitor or higher resolution.



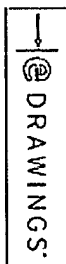
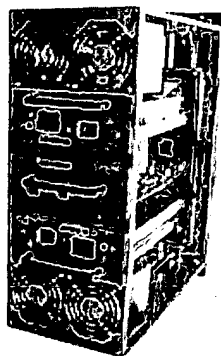
## Innovative High Speed Switch Packaging

A major defense electronics manufacturer approached Chassis Plans to design and manufacture the





enclosure for their sophisticated high speed switch. The system houses 3 hot swap modular cards, rear mounted CPU module, dual hot swap power supplies, 4 hot swap fans and an internal backplane tying all the electronics together. Several innovative design features were incorporated to enable the system to meet specification.



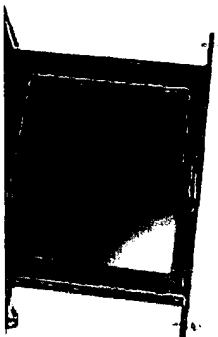
### ASI Switch Platform

A manufacturer of PCI silicon products for PCI Express interface needed a development platform for their customers. Chassis Plans provided a simple 1U enclosure to mount their PCB. Using a modified off the shelf 1U ATX power supply simplified their product and lowered their costs.



### Ultra Light Short Depth Keyboard LCD Display

A customer required a light weight 1U LCD Display / Keyboard to fit in a Harig travel case. The requirement was a weight less than 22 pounds and an installed depth less than 20 inches. Chassis Plans exceeded the design requirement by producing a keyboard weighing 19.6 lbs with an installed depth of 19 inches. There is no lighter or shorter keyboard



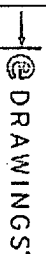
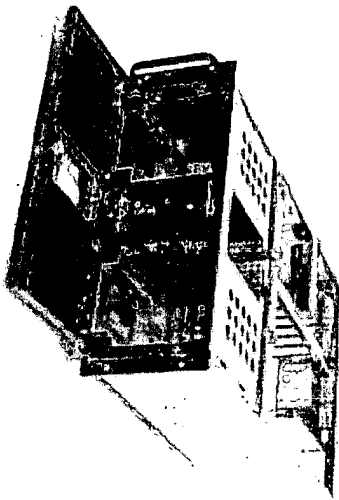
on the market with these features.

Note: This display is in production and available for sale to other OEM's.

## **4U Battlefield Tactical Situation Server**

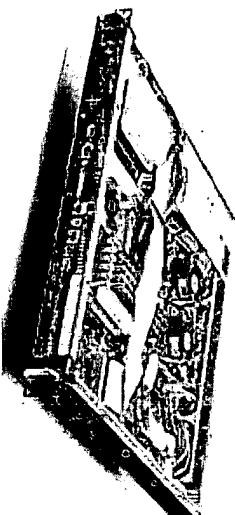
A major supplier of battlefield qualified systems required a continued supply of the Appro 4408 chassis which Appro no longer offered. The specification from their military customer did not allow for another chassis to be substituted. Chassis Plans exactly reproduced the Appro 4408 chassis dimensionally and functionally. The chassis looks exactly the same. Turn around time on the project was a short 5 weeks.

Note: This chassis is in production and available for sale to other OEM's.



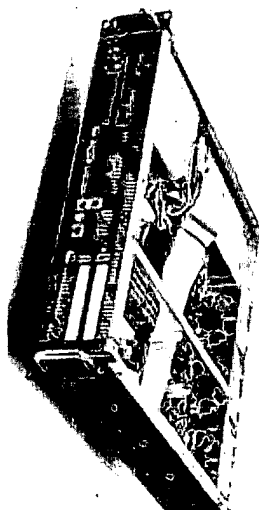
## **1U Custom Short EATX Chassis - Front I/O**

A large highly respected manufacturer of chip manufacturing equipment required a very custom rackmount system. A limiting factor was a depth limit of 16.63" and the I/O had to be accessible at the front. An Intel EATX Dual Xeon Server Board fits and provides 1 I/O slot. A hard drive and 1U power supply are included. Seven high flow 40x38mm fans cool the system. Chassis Plans provides totally integrated systems.



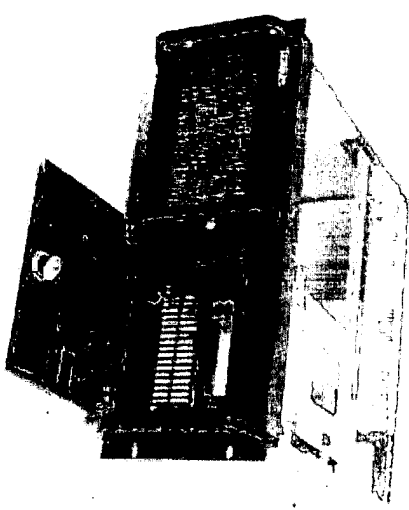
## **2U Custom Short EATX Chassis - Front I/O**

In conjunction with the 1U system shown above, the customer also required a 2U chassis of similar construction. A limiting factor was a depth limit of 16.63" and the I/O had to be accessible at the front. An Intel EATX Server Board fits and provides 2 I/O slots. A hard drive, slim CD and 2U power supply are included. Three high flow 80mm fans cool the system. Chassis Plans provides totally integrated systems.



## **4U Custom Aluminum Chassis**

A leading company in audio noise control for broadcast and film required a quantity of small, light 4U enclosures for mounting in a Hartig portable case. We modified our standard C3Chassis to exactly meet their requirements. Modifications included an aluminum construction instead of steel for lighter weight, low noise fans, modified rear panel including BNC connectors, modified drive bay area, customer specific paint and logo.



## **1U Custom SCSI Drive Chassis**

An aerospace company needed a 1U chassis to hold 2 removable SCSI drives or a mix of removable drives and tape drives. The chassis had to be 16 inches deep and 16.75 inches wide which precluded an off-the-shelf solution. Good cooling was required.

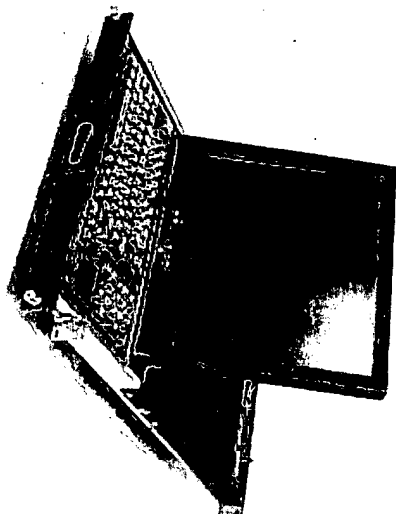


## Ultra Rugged 1U 17" LCD/Keyboard

A defense contractor required a large quantity of "flight line proof" rackmount keyboard/LDCs. They liked the features of the CPS217 but had special ruggedization requirements. Chassis Plans was able to modify the standard CPS217 to include:

- Mag-Floride coated protective glass over the LCD
- Aluminum construction instead of steel
- Special Cherry keyboard w/ touch pad
- Shortened length for installation in a Harig case

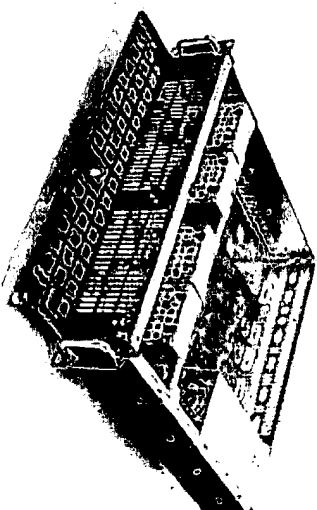
Note: This display is in production and available for sale to other OEM's.



## 2U Chassis for ATX Form Factor PCB

The customer's existing supplier was not able to keep up with the orders. The existing chassis was simply a stock 2U with a custom rear panel. This led to several compromises in the cooling of this high power system. The customer also wanted a matching 2U chassis for a cohesive system look.

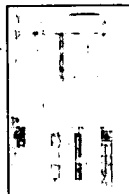
Chassis Plans redesigned the E1CHASSIS to remove the drives, incorporate a new rear panel, new chassis, fan bracket and door. In addition, Chassis Plans' engineers noticed an error in the customers PCB layout and provided a custom spacer to better support the rear panel connectors.



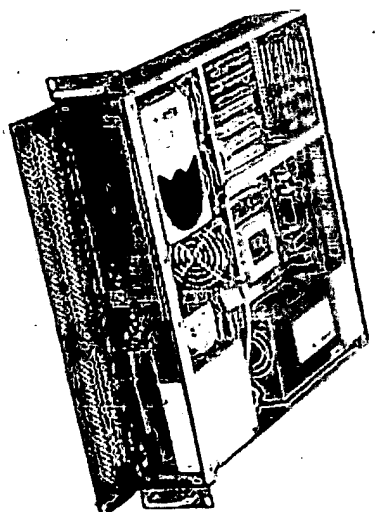
Custom Chassis

The first call for this project was logged May 22, 2003. The proposal drawing was approved May 28. Fifty five custom chassis were shipped to the customer June 13.

Click below for a PDF of the E1CHASSIS Customer Drawing next to the proposal drawing for the custom chassis.



[+ enlarge](#)

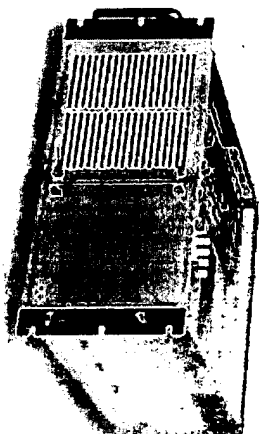


Original E1CHASSIS

## **5U Rugged System for Extreme Environment**

In the winter they build ice roads. You can't drive to the oil wells in the summer because the tundra is too soft. This international oil services company needed a chassis that would survive continuous bouncing and banging in the back of the data logging truck as they drove on these ice roads. Hard to get parts in the middle of Winter in the far North oil country when your computer gets bounced to death.

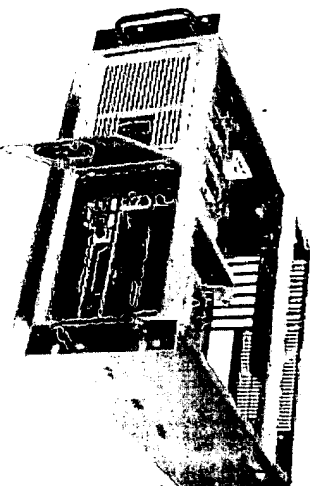
Chassis Plans created what has to be one of the most rugged chassis every built. Each of the drive trays is held by four thumb screws, two in front and two in back. Five SCSI drives are arrayed behind the air filter for good cooling. A card hold-down is tailored to the installed cards. Special zero backlash slides are used. All stainless steel hardware was installed for harsh high salinity environments. Color matching was provided as well as a standard silk screen with the company's logo. Strict depth and front panel requirements were met to comply with the customer's specification. Chassis Plans was able to create



an enclosure that will accommodate their needs for years to come.

## **4U Rugged System for Extreme Environment**

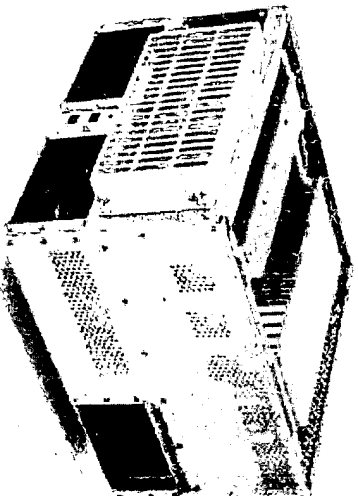
After designing and producing a large quantity of the 5U chassis shown above, the customer required the same chassis features in a 4U enclosure. The resulting design is identical in all regards in a smaller package.



## **6U Rugged System for Navy Ship Installation**

Spawar came to Chassis Plans to design a Mil Spec chassis that would be light, extremely rugged, adaptable, and able to satisfy the rigorous shock and vibration specification in 901D. The "Rock" was the result.

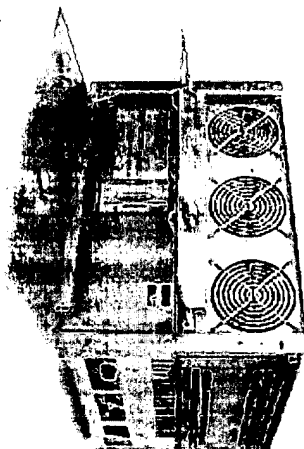
This is an aluminum and stainless enclosure providing redundant power, 4 5.25" external drives, 2 3.5" external drives, and 2 internal 3.5" drives. Both Intel and Sun motherboards can be accommodated. The chassis passed Mil Spec 901D (Barge Test). If you are not familiar with the Barge Test, go here for some entertaining video (Large File - 27Mb).



## **7U Chassis Designed to Customer Specification**

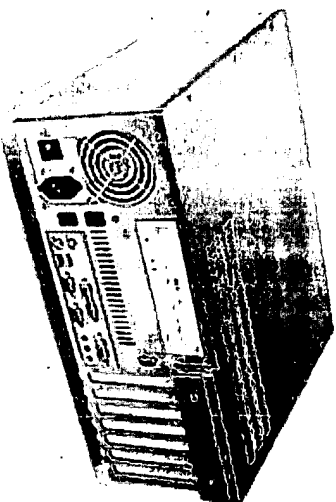
The DOD required a robust 20-slot chassis for use in remote locations world-wide. Critical performance issues had to be met. The system had to be easy to install and maintain with minimal MTTR. A defined drive mix as well as depth issues precluded using an off-the-shelf solution.

Chassis Plans successfully met the design challenge offering an innovative solution with a swing-down and removable drive/power supply sub chassis. This approach greatly simplified initial integration and on-site service. The top section accommodates any 20-slot backplane offering 20 full slots with great cooling for the installed high power cards.



## W03 Wallmount / Benchtop Chassis

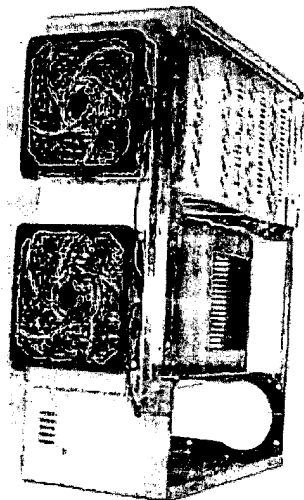
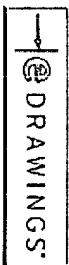
Chassis Plans was approached by an arcade game manufacturer to provide a ruggedized PC chassis able to fit existing game cabinets and to survive the abuse and transportation loads imposed on these cabinets. Microsoft and Intel were supporting the Arcade PC initiative to use simple PC components for arcade games instead of the historically used dedicated boards. The problem was office type computers were failing. See [ArcadePC Drop](#) for a graphic example of what this system can survive.



The resulting design was the first single-sided arcade chassis allowing access to all I/O and drives from the same side. The chassis can be supplied with shock mounts tailored to the specific application.

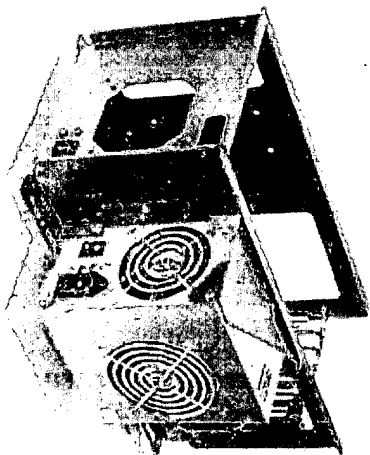
Variations of the original design have now been installed in such diverse applications as ATMs and kiosks. Lumber mill saw control where constant vibrations and shocks were killing other systems, chip testing systems where cooling fan vibration is an issue, public

transportation. This design is perfect for any application which requires an easy to service yet rugged shock and vibration resistant design. Shock mounting the entire system is the only way to assure component survivability. See our White Paper on Shock and Vibration.



## Embedded Card Cage

The customer, a large multinational printing press manufacturer, needed to replace an existing card cage with a newer model. The backplane had changed and his offshore supplier was not able to adapt in a timely manner. The customer also wanted to incorporate some additional features. Chassis Plans was able to create full documentation in 2 weeks and provide prototype system 2 weeks after that.



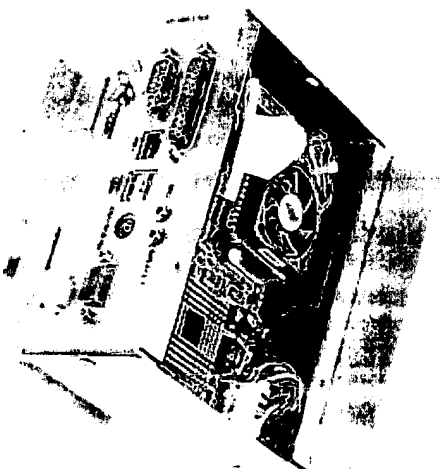
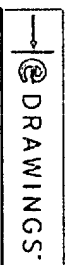
## Embedded Election System

With the US not having a President for several weeks due to hanging chad, the Government has provided funds to modernize the voting process. The Government's goal is computerized voting for all elections. In



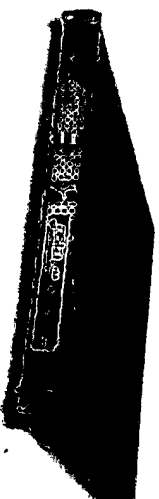
conjunction with several partners. Chassis Plans developed a small, light weight system to control the LCD panel, touch screen, printer, and provide network and WIFI interface. This compact computer was 1/4 the weight and 1/3 the size of the competition

Included inside the 6"x4-3/4"x2.5" chassis is an 800MHz Via board, 2-1/2" hard drive, PCMCIA WIFI controller and flash drive. Total system weight is 1-1/2lbs.



## 1U Network Appliance

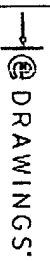
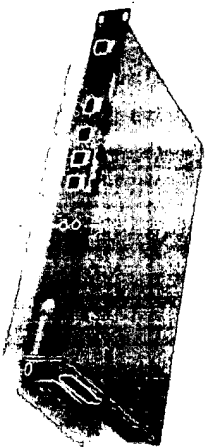
This embedded 1U network appliance was developed to maintain the continuous flow of legitimate customer traffic during a Denial of Service attack as well as minimize the time network engineers spent on labor-intensive manual investigations. The customer was unable to find an off the shelf product that offered the required appearance and features. The design incorporated high airflow to cool the motherboard as well as a front panel LCD display for system status.



## 1U Network Security Appliance

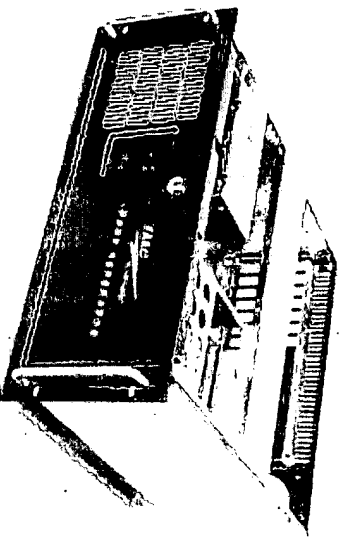
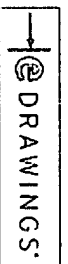
Network Perimeter Policing is the comprehensive real-time monitoring and interpretation of important system events

throughout a customer's network, including unauthorized behavior, malicious hacks and denials of service (DoS), anomalies and trend analysis. The customer required a simple 1U chassis, no external drives, and a defined front panel connector scheme. Chassis Plans was able to quickly develop a chassis which exceeded all the customer expectations.



## 4U Simulator Image Generator

The customer had been purchasing another chassis which went end-of-life. The application is for complex operator simulators for the military, bus drivers, police drivers, etc. The chassis had to look good, provide limited access to the drives and controls, and adequately cool the image generator boards and motherboard.



## Appro Reverse Engineer

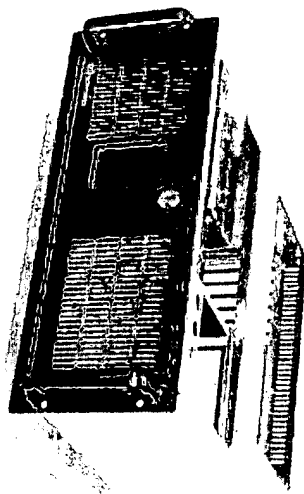
Appro 4402 Replacement

Appro stopped selling their 4U 4402 and 4408 chassis leaving many customer scrambling for solutions. Chassis Plans provides identical chassis by reverse engineering the original Appro products. The result is customers previously purchasing the Appro 4402 and 4408 chassis now have a reliable source for

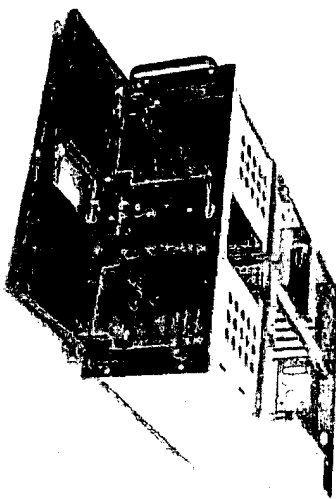
continued production.

The FAAC Simulation Image Generator profiled above was a modified Appro 4402 chassis.

Please note these chassis are available for general purchase from Chassis Plans.

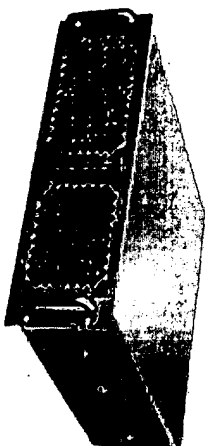


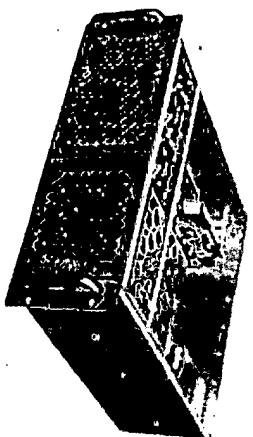
Appro 4408 Replacement



### **CPATX 4U Enclosure**

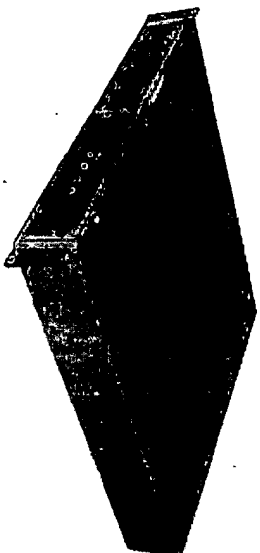
A relatively simple custom chassis. Standard 4U design with three horizontal 5-1/4" drives. The client wanted additional cooling for the hard drives in addition to their own look. The end product was powder coated over the entire exterior and had a complex logo silk screened to the door.





## **2U Rack Mount ATX/Backplane**

The customer needed a high performance motherboard with sufficient cooling for the dual processors. The three plug-in PCI cards were accommodated using a riser card which provided the proper PCI interrupt parsing. In addition, the chassis had no front accessible drives and dual SCSI hard drives in a mirror arrangement. Of course, custom paint and logo were provided.



## **Custom 417 Rackmount Enclosure**

The client required a minimal depth 4U chassis with good cooling, filtered air, and no locks. Having control over the manufacturing and having a domestic source were important. The resultant design was constructed of 16 gage CRS, was only 16.5" deep, and is fully revision controlled for consistency. The chassis is gold zinc while the front panel is painted. The lid is secured by only two screws for quick removal.

